

## FOUR NEW THYSANOPTERA FROM AFRICA.

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The new species described below were collected by Mr. Arthur W. Jobbins-Pomeroy, Government Entomologist of Southern Nigeria, in 1915, and the descriptions have been prepared and awaiting publication for six or seven years.

All types are in the writer's collection.

**Anaphothrips flavidus**, new species.

*Female (macropterous).*—Length about 1.1 mm. Color bright yellow, the seven basal abdominal tergites each with a brown blotch occupying the median half; last two abdominal segments more heavily chitinized, darker laterally, and with orange colored pigment; wings smoky gray, darker along the longitudinal veins; legs concolorous with body; antennæ dark brown, with segment 1 nearly colorless, and segments 3 and 4 yellow, lightly clouded with brown toward apex; ocellar pigment bright red.

Head very slightly longer than wide and slightly longer than prothorax; occiput with a few faint anastomosing lines; bristles minute, colorless. Eyes 0.4 as long as head, 0.8 as long as cheeks, and 0.6 as wide as their interval. Ocelli rather widely separated, forming a nearly equilateral triangle, the center of which is opposite middle of eyes. Antennæ about 1.64 times as long as head, structure normal to the genus; sense cones on third and fourth segments forked, short; sixth segment not divided. Maxillary palpi three-segmented.

Prothorax about 1.3 times as wide as long and slightly shorter than head; pronotum smooth, with a few very minute, transparent bristles on disk, and without bristles at either the anterior or posterior angles. Wings of fore pair with two longitudinal veins extending from base to tip, each vein with a few scattered bristles. Legs rather short and stout.

Abdomen with posterior margin of segment 8 produced dorsally into a comb of slender spines; segments 9 and 10 more heavily chitinized, the latter divided above; bristles as in *A. obscurus*.<sup>1</sup>

Measurements of holotype (♀): Length 1.260 mm.; head, length 0.146 mm., width 0.144 mm.; prothorax, length 0.144 mm., width 0.186 mm.; pterothorax, width 0.240 mm.; fore wings, length 0.660 mm., width near base 0.063 mm., at middle 0.044 mm.; abdomen, width 0.240 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length ( $\mu$ )	22	33	40	36	35	46	10	13
Width ( $\mu$ )	26	27	19	18	19	18	8	5

Total length of antenna 0.235 mm.

*Male (macropterous).*—Length about 0.09 mm. Very similar to female, but smaller, slenderer, and paler. First antennal segment nearly colorless; 2–4 and base of 5, yellow, 2 darker at sides and 4 darker at apex; remainder of antenna dark brown. Abdomen with apical segments more heavily chitinized, and with the last two segments suffused with orange-colored pigment; segment 9 with two pairs of chitinous dorsal projections, those of the posterior pair slightly more widely separated.

<sup>1</sup>See Hinds, Proc. U. S. Nat. Mus., Vol. XXVI, 1902, Pl. V, fig. 50.

Measurements of allotype (♂): Length 1.056 mm.; head, length 0.123 mm., width 0.126 mm.; prothorax, length 0.117 mm., width 0.141 mm.; pterothorax, width 0.201 mm.; fore wings, length 0.540 mm., width near base 0.063 mm., at middle 0.041 mm.; abdomen, width 0.201 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length ( $\mu$ )	21	30	36	32	32	40	08	12
Width ( $\mu$ )	24	22	17	16	17	16	7	5
Total length of antenna 0.211 mm.								

Described from one individual of each sex, taken by Lieut. A. W. Jobbins-Pomeroy from *Andropogon tectorum*, at Ibadan, Southern Nigeria, January 11, 1915.

This species is a true *Anaphothrips*, closely resembling *A. obscurus* but more slender and graceful in outline. From the three described African species of this genus—*loennbergi* Trybom, *sudanensis* Trybom, and *alternans* (Bagnall), the latter of which is represented in the material before me by a female cotype in excellent condition, received from Mr. Bagnall—it may at once be known by the yellow color, the uniform gray wings, the long head, and by having the eyes shorter than the cheeks.

#### ***Astrothrips pentatoma*, new species.**

*Female (macropterous).*—Length about 1.14 mm. Dorsal surface deeply reticulate. Color yellowish brown, with sides of pterothorax and abdominal segments 2–7 dark brown; abdomen paler towards apex, especially medially, and with sides of segments 8 and 9 and apical third of 10, darkened with blackish; antennæ yellow, with segments 1 and 2 darker and segment 5 brownish in apical third; femora brown, somewhat paler apically; tibiae with slender basal portion and apical half or third, yellow, intermediate portion brown, middle tibiae darkest; tarsi pale yellow; fore wings with a brown band at basal third and one at apical fifth, each interrupted at middle of wing; basal sixth of fore wings yellowish brown, intervening portions darkened along anterior and posterior margins with brown; hind wings light gray-brown, darker toward apex, and with a dark brown median streak from near base.

Head polygonally reticulate, about 1.6 times as wide as long, very slightly broadest across eyes; cheeks nearly straight, slightly converging posteriorly, and abruptly constricted at extreme base to form a neck 0.7 as broad as the distance across eyes; vertex elevated and produced, overhanging insertion of antennæ, and bearing the ocelli, of which the anterior surpasses the front margin of eyes and is directed forward, and the posterior pair laterally. Eyes half as long as head, longer than their distance from the neck, and about one-third as wide as their interval. Antennæ five-segmented, two and one-third times as long as head, and reticulate; segment 1 short, subcylindrical, slightly broader than long; 2 broadest in entire antenna, goblet-shaped, pedicellate; 3 slender, vasiform pedicellate, four times as long as wide; 4 about 0.67 as long as 3 and somewhat stouter; 5 longest in entire antenna and somewhat broader than 4, fusiform and pedicellate; sense cones short and simple.

Prothorax about 1.7 times as wide as long, equal in length to head and similarly reticulate, somewhat broadest anteriorly, sides broadly rounded; pronotum with a broad transverse furrow in front of middle and a pair of large transversely elliptical foveæ behind middle; lateral margin explanate. Pterothorax 0.8 as long as wide and about one and one-third times as wide as prothorax, strongly narrowed behind, sides rounded; mesoscutum polygonally reticulate at sides and behind, remainder with anastomosing striæ converging to posterior portion of median line. Wings of fore pair about sixteen times as long as width at middle, which is slightly more than half the greatest subbasal width; ring vein reinforced along anterior and posterior margin by the complete fusion with them of the two principal veins; bristles on fore wings stout, heavy, broader at middle than at base, and more or less blunt, nearly as long as width of wing at middle, those on the dark transverse bands nearly black, costal margin with about 13, anterior vein with 7 beyond fork, and posterior vein with 10; anterior margin of fore wings near base with a ventral brush of about nine hairs. Legs slender, reticulate, hind pair longest.

Abdomen wider than pterothorax, strongly and sharply constricted beyond base of segment 2, which is the longest in entire abdomen; 10 tubular, three-fifths as wide at base as long, not constricted near base, divided in entire length above by a longitudinal suture; sides of basal tergites deeply reticulate, except 1, which is smooth, and 2, which is asperate; dorsum of 9 and 10 lightly polygonally reticulate; bristles minute, those on segment 9 and the stouter pair at apex of 10 less than one-third as long as the latter segment.

Measurements of holotype (♀): Length 1.140 mm.; head, length 0.110 mm., greatest width 0.180 mm., basal width 0.124 mm.; eyes, length 0.056 mm., width 0.036 mm., interval 0.102 mm.; prothorax, length 0.113 mm., width 0.194 mm.; pterothorax, width 0.264 mm.; abdomen, greatest width 0.317 mm.; segment 10, length 0.098 mm., width at base 0.060 mm.; fore wings, length 0.648 mm., width at middle 0.041 mm., near base 0.073 mm.

Antennal segments:	1	2	3	4	5
Length ( $\mu$ )	24	39	68	46	84
Width ( $\mu$ )	26	33	17	18	19

Total length of antenna 0.261 mm.

Described from one female taken by Lieut. Arthur W. Jobbins-Pomeroy at Ibadan, Southern Nigeria, in a flower of *Phaseolus lunatus* L., January 27, 1915.

Readily known by the five-segmented antennæ.

#### ***Liothrips genualis*, new species.**

*Female (macropterous).*—Length about 1.7 mm. Color blackish brown; antennal segments 2–5 brown, successively darker, each more or less clouded; 6–8 dark blackish brown; tips of femora, both ends of fore tibiæ, and all tarsi, yellow; fore wings light brown, with a pale longitudinal streak in posterior third; hind wings slightly paler than fore wings and with a dark median streak in basal two-thirds.

Head about 1.14 times as long as wide, cheeks straight and parallel; vertex slightly produced, the anterior ocellus directed forward and upward, very

slightly overhanging; dorsal and lateral surfaces distinctly transversely striate with anastomosing lines and with a few minute bristles; postocular bristles capitate and about equal in length to eyes. Eyes about 0.36 times as long as head and not protruding. Posterior ocelli slightly in front of a line drawn through middle of eyes. Antennae twice as long as head, of the general form and structure common to the species of the genus, segments 7 and 8 rather closely united; sense cones disposed as follows: 3, 0-1; 4, 1-2; 5, 1-1 +1; 6, 1-1 +1; 7 with one on dorsum near apex. Mouth cone long, acute, attaining base of prosternum.

Prothorax along median dorsal line about 0.7 times as long as head and (inclusive of coxæ) about 2.5 times as wide as long; all bristles present, long, capitate, the two pairs at the posterior angles longest and subequal; coxal bristle about equal in length to anterior angular. Pterothorax slightly wider than prothorax, sides slightly arcuate. Wings long, less closely fringed than usual, of nearly the same width throughout; fore pair with the three subbasal bristles capitate and about equal in length to the two pairs on anterior margin of prothorax, and with eight or nine accessory hairs on posterior margin. Fore tarsi unarmed.

Abdomen of normal form, large and heavy, wider than pterothorax. Tube about 0.8 as long as head and very slightly more than twice as wide at base as at apex, sides straight. Lateral abdominal bristles capitate in part, those on apical segments about 0.8 as long as tube, all bristles on segment 9 pointed; terminal bristles equal in length to tube, brown.

Measurements of holotype (♀): Length 1.66 mm.; head, length 0.228 mm., greatest width 0.199 mm.; eyes, length 0.082 mm., width 0.060 mm., interval 0.067 mm.; postocular bristles, length 0.079 mm.; prothorax, length 0.156 mm., width (inclusive of coxæ) 0.396 mm.; pterothorax, length 0.396 mm., width 0.406 mm.; abdomen, greatest width 0.444 mm.; tube, length 0.186 mm., width at base 0.096 mm., at apex 0.046 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length ( $\mu$ )	45	60	66	65	67	60	54	37
Width ( $\mu$ )	44	37	34	36	34	33	27	15

Total length of antenna 0.454 mm.

Described from one female taken by Lieut. A. W. Jobbins-Pomeroy on *Bougainvillea glabra* at Ibadan, Southern Nigeria, January 11, 1915.

The North American *L. leucogonis* is the only other species of the genus in which the knees are described as pale. The dark wings of the present species are also an unusual character.

#### ***Liothrips badius*, new species.**

*Female (macropterous).*—Length about 2 mm. Color chestnut brown, with head, apical abdominal segments, and basal half of tube darker; segment 3 of antennæ distinctly paler in basal two-fifths, segments 4-6 slightly paler basally; legs concolorous with body, except tarsi, which are yellowish; wings brown, the fore pair with a darker median streak extending from the region of the three subbasal bristles to tip of wing, this streak margined posteriorly with a narrower



colorless one, the latter about equal in width to a second brown streak forming the posterior margin of wing; hind wing with a narrower dark streak extending from base to apex, broadly margined anteriorly with paler.

Head about 1.37 times as long as wide, cheeks straight and parallel; vertex slightly produced, the anterior ocellus directed forward and distinctly overhanging; dorsal and lateral surfaces finely but distinctly transversely striate with anastomosing lines and with a few very minute and indistinct bristles; postocular bristles unusually short and inconspicuous, less than one-third as long as eyes, pointed. Eyes about 0.38 as long as head, not protruding. Posterior ocelli distinctly in front of a line drawn through middle of eyes. Antennæ twice as long as head, unusually slender, segments 7 and 8 rather closely united; sense cones long and slender, disposed as follows: 3, 0-1; 4, 1+1-2; 5, 1-1+1; 6, 1-1+1; 7 with one on dorsum near apex. Mouth cone attaining base of prosternum, the labrum surpassing the broadly rounded labium.

Prothorax along median dorsal line about 0.52 as long as head and (inclusive of coxæ) about 2.5 times as wide as long; all bristles present, blunt or slightly capitate, dark brown in color, the two pairs on anterior margin about equal in length to postoculars, the others more than twice as long and subequal in length; coxal bristle somewhat shorter and more slender than midlateral. Pterothorax distinctly wider than prothorax, sides slightly arcuate. Wings long, of nearly the same width throughout; fore pair with the three subbasal bristles slightly capitate and subequal to midlateral, and with nine or ten accessory hairs on posterior margin. Legs long and slender; fore femora not at all swollen; fore tarsi unarmed.

Abdomen of normal form, large and heavy, wider than pterothorax. Tube 0.83 as long as head and twice as wide at base as at apex, sides straight. Lateral abdominal bristles stout, dark brown, and conspicuous, similar to the larger ones on prothorax, with the exception of those on segment 9 which are slender, pale, and pointed, and those at apex of tube, which are slender, brown, pointed, and about 0.8 as long as tube.

Measurements of holotype (♀): Length 2.04 mm.; head, length 0.288 mm., greatest width 0.210 mm.; eyes, length 0.111 mm., width 0.072 mm., interval 0.069 mm.; postocular bristles, length 0.031 mm.; prothorax, length 0.151 mm., width (inclusive of coxæ) 0.373 mm.; pterothorax, width 0.456 mm.; fore wing, length 1.14 mm., width at middle 0.108 mm.; abdomen, greatest width 0.550 mm.; tube, length 0.240 mm., width at base 0.093 mm., at apex 0.046 mm.

Antennal segments:	1	2	3	4	5	6	7	8
Length ( $\mu$ )	51	65	87	87	91	86	71	45
Width ( $\mu$ )	42	34	29	32	29	29	24	14

Total length of antenna 0.583 mm.

Described from one female taken by Lieut. A. W. Jobbins-Pomeroy in Kamerun, December 12, 1915, by sweeping.

The long head and general facies are suggestive of such species as the North American *Liothrips citricornis*. It may readily be known, however, by the coloration of the wings and antennæ, the unarmed fore tarsi, and the minute postocular bristles.